FIG. 1A Prior Art

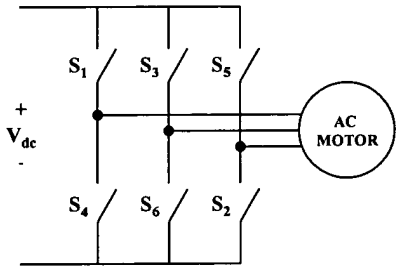


FIG. 1B Prior Art

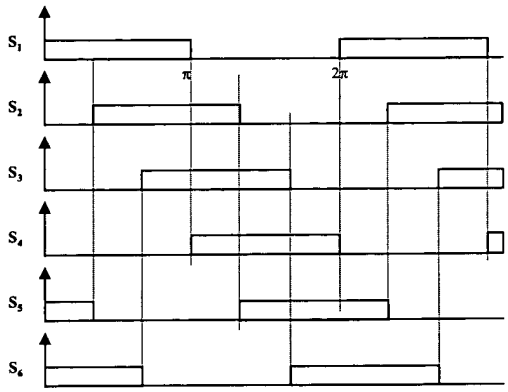
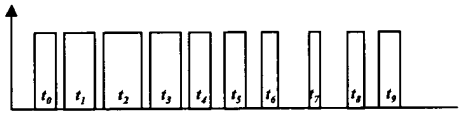


FIG. 1C Prior Art



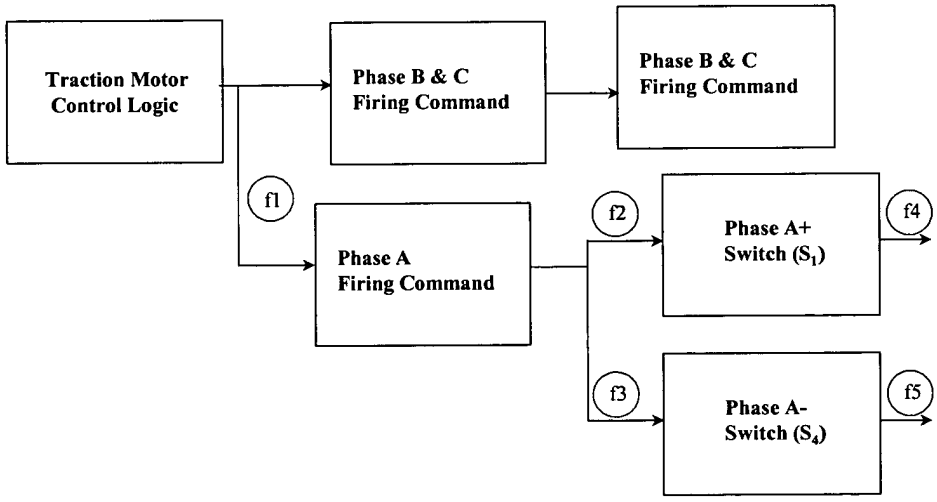


FIG. 2 Prior Art

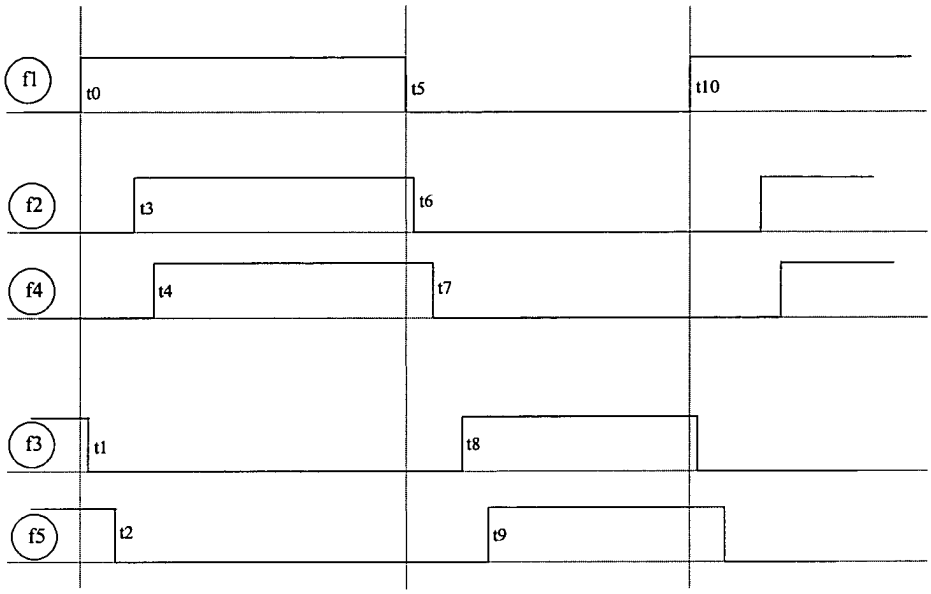


FIG. 3 Prior Art

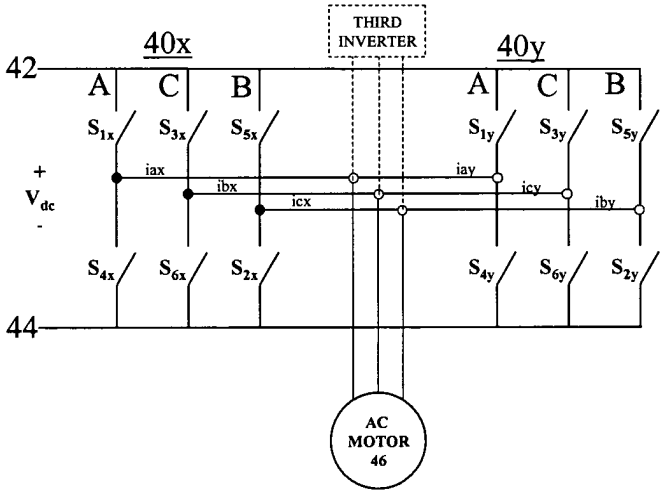


FIG. 4

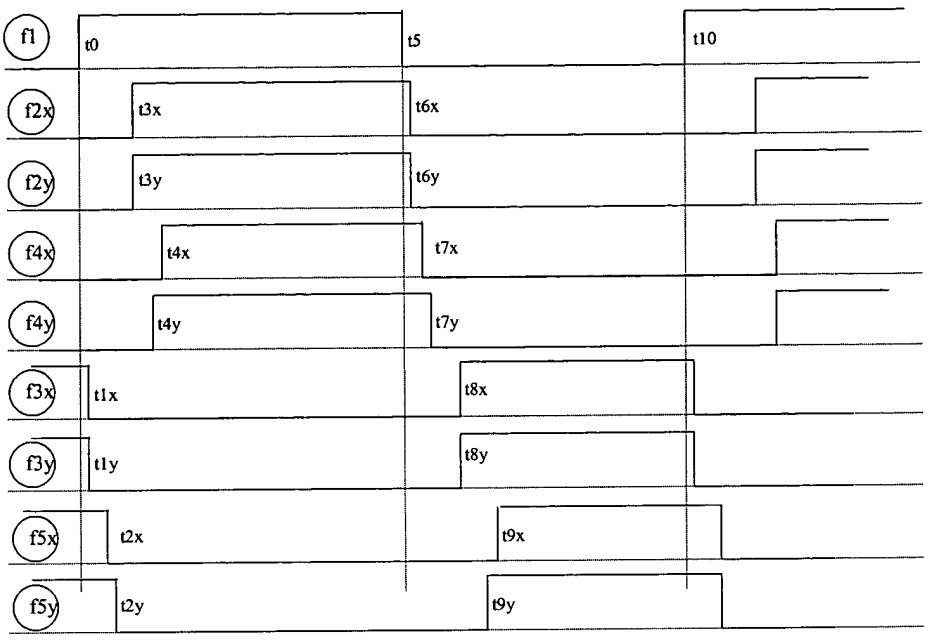

f1
t0
t5
t10
f2x
t3x
t6x
f2y
t3y
t6y
f4x
t4x
t7x
f4y
t4y
t7y
f3x
t1x
t8x
f3y
t1y
t8y
f5x
t2x
t9x
f5y
t2y
t9y

FIG. 5

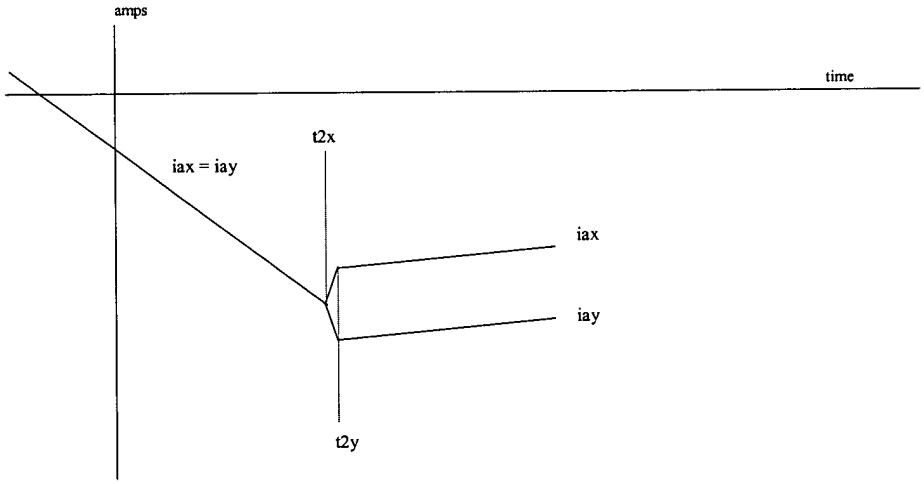

amps
time
t2x
iax = iay
iax
iay
t2y

FIG. 6

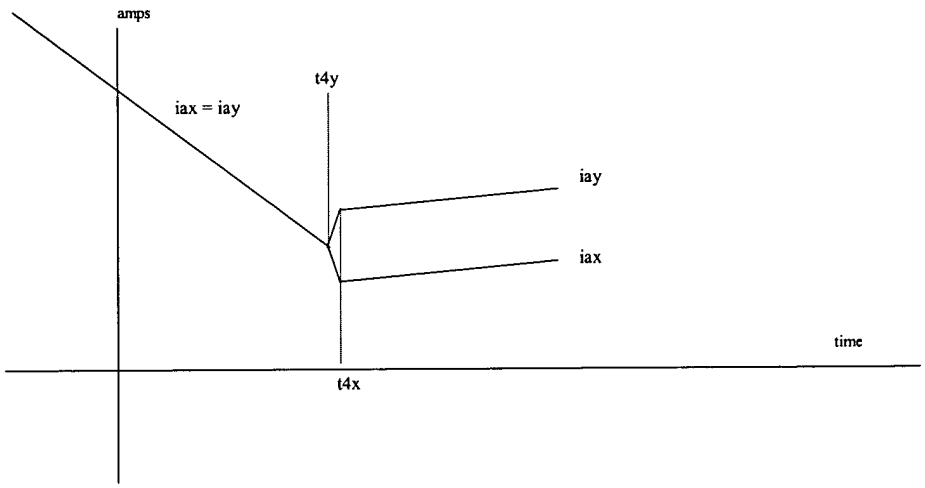

amps
t4y
iax = iay
iay
iax
time
t4x

FIG. 7

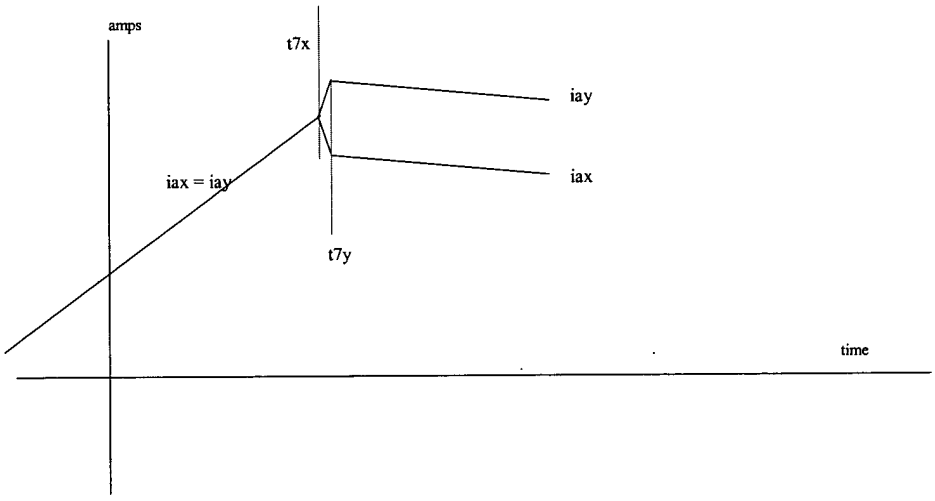

amps
t7x
iay
iax = iay
iax
t7y
time

FIG. 8

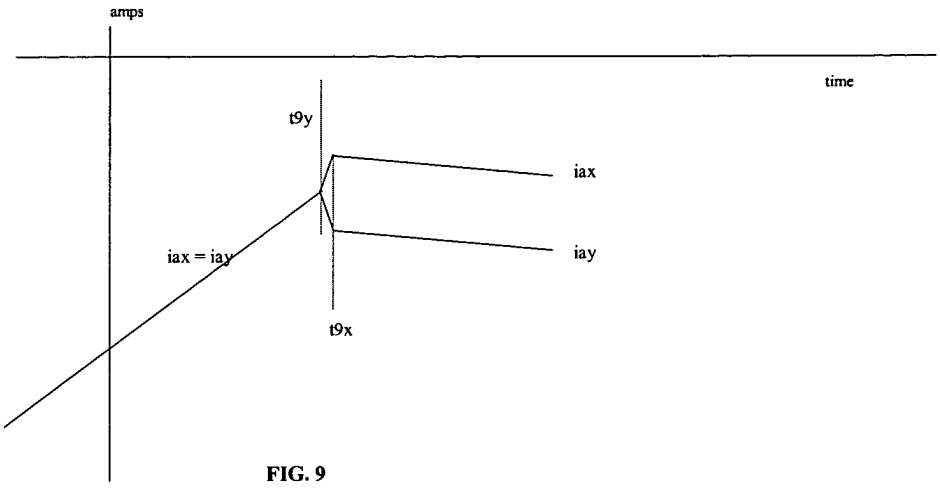

amps
time
t9y
iax
iay
iax = iay
t9x

FIG. 9

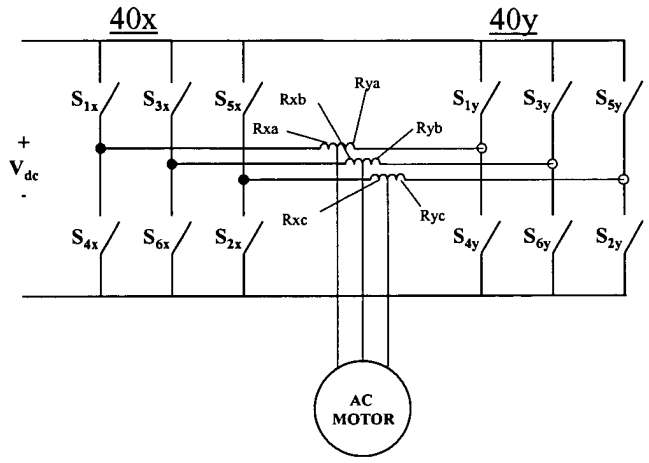

40x
40y
S1x
S3x
S5x
Rxb
Rya
Rxa
Ryb
S1y
S3y
S5y
+
Vdc
-
Rxc
Ryc
S4x
S6x
S2x
S4y
S6y
S2y
AC
MOTOR

Fig. 10

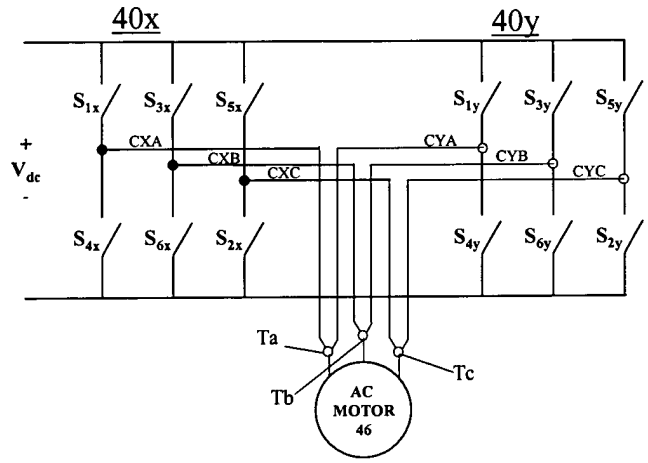

40x
40y
S1x
S3x
S5x
S1y
S3y
S5y
+
Vdc
-
CXA
CXB
CXC
CYA
CYB
CYC
S4x
S6x
S2x
S4y
S6y
S2y
Ta
Tb
Tc
AC
MOTOR
46

FIG. 11

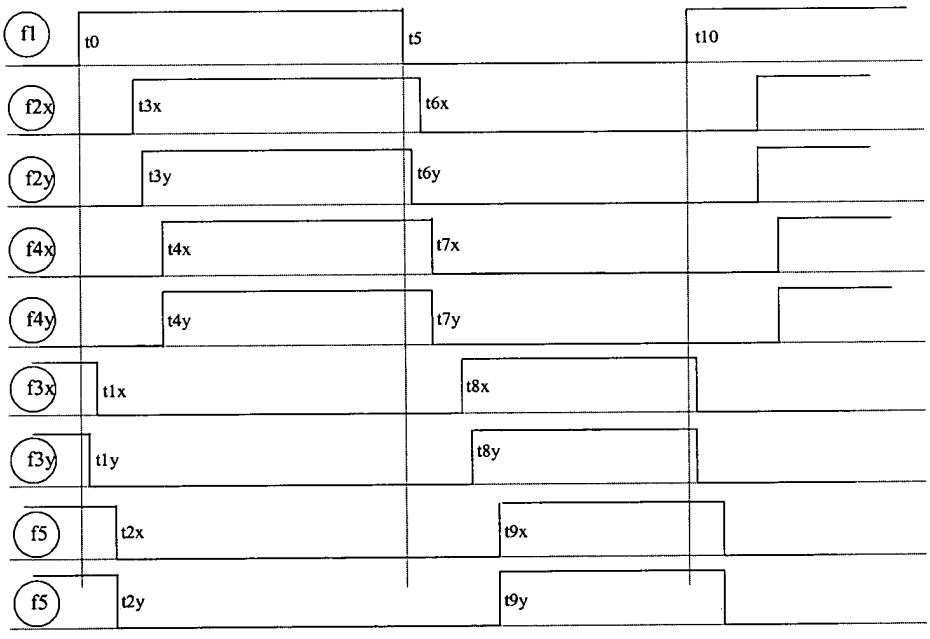

f1
t0
t5
t10
f2x
t3x
t6x
f2y
t3y
t6y
f4x
t4x
t7x
f4y
t4y
t7y
f3x
t1x
t8x
f3y
t1y
t8y
f5
t2x
t9x
f5
t2y
t9y

FIG. 12

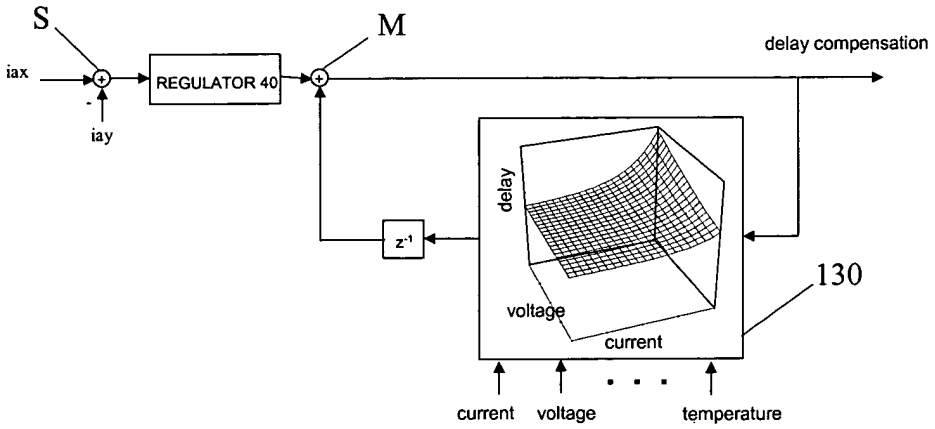


FIG. 13

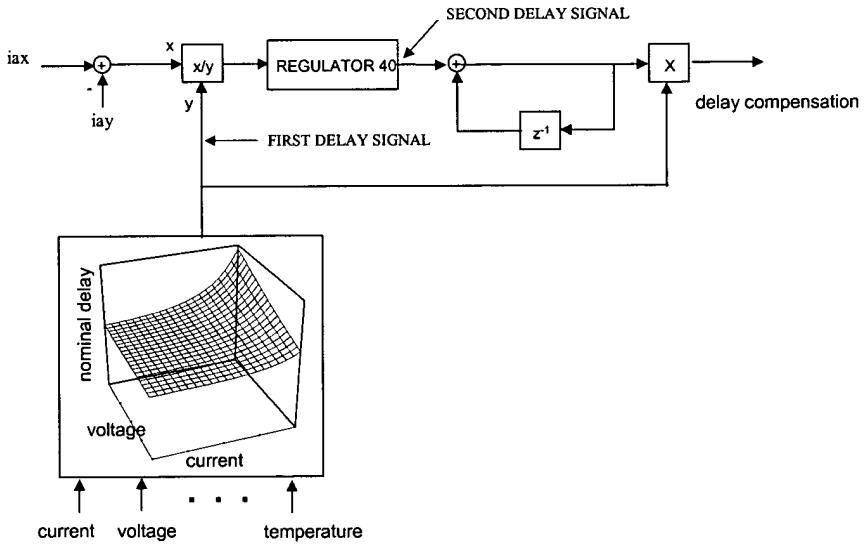


FIG. 14 Current equalizing regulator option 2

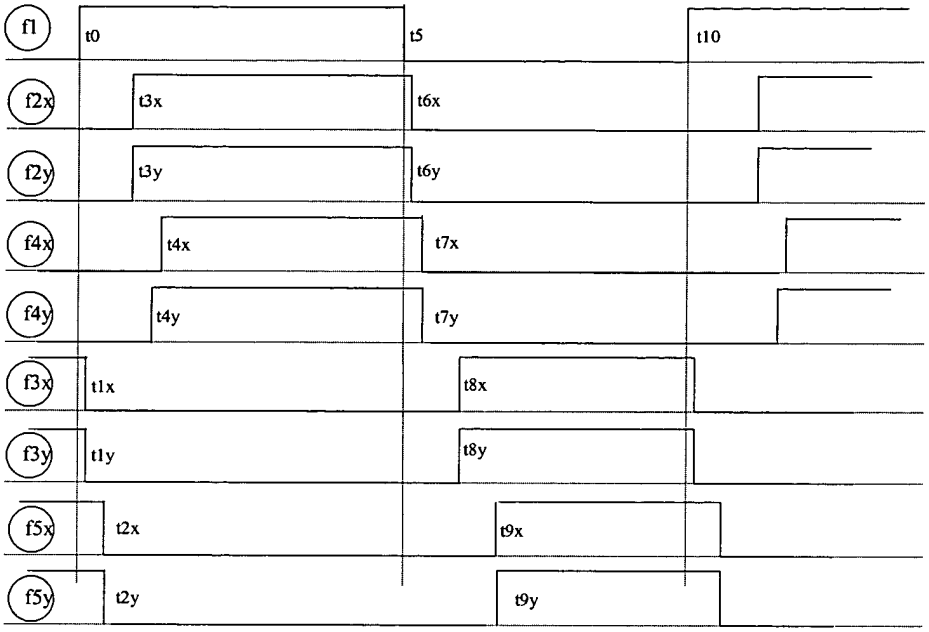

f1
t0
t5
t10
f2x
t3x
t6x
f2y
t3y
t6y
f4x
t4x
t7x
f4y
t4y
t7y
f3x
t1x
t8x
f3y
t1y
t8y
f5x
t2x
t9x
f5y
t2y
t9y

FIG. 15

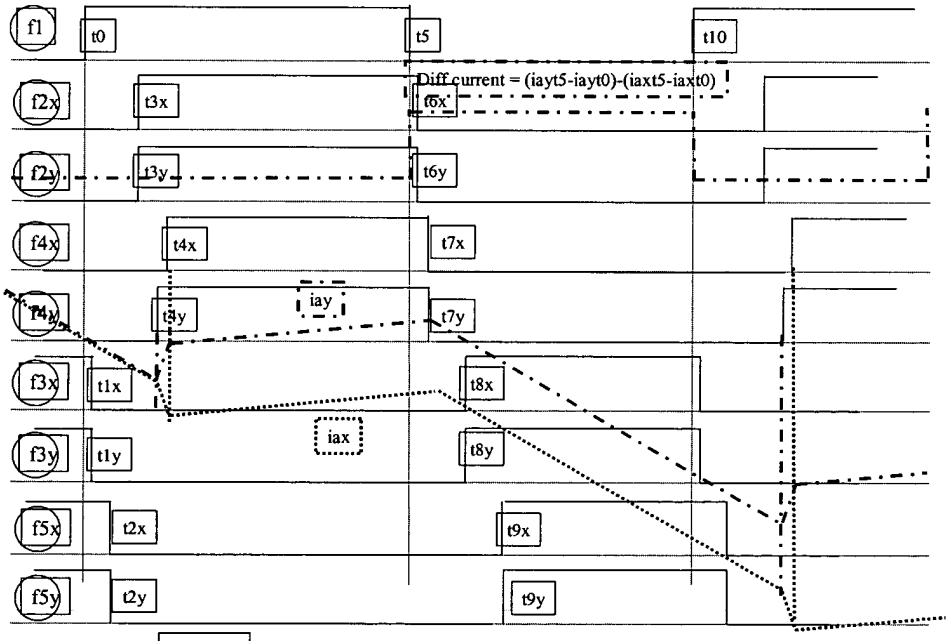

f1
t0
t5
t10
Diff current = (iayt5-iayt0)-(iaxt5-iaxt0)
f2x
t3x
t6x
f2y
t3y
t6y
f4x
t4x
t7x
f4y
t3y
iay
t7y
f3x
t1x
t8x
iax
f3y
t1y
t8y
f5x
t2x
t9x
f5y
t2y
t9y

FIG. 16

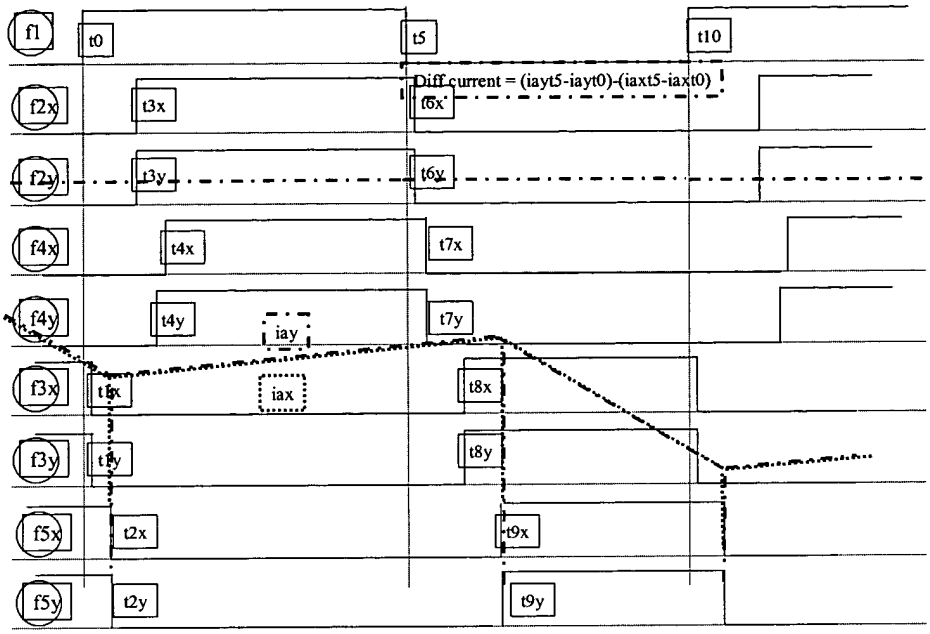

f1
t0
t5
t10
Diff current = (iayt5-iayt0)-(iaxt5-iaxt0)
f2x
t3x
t6x
f2y
t3y
t6y
f4x
t4x
t7x
f4y
t4y
iay
t7y
f3x
t1x
iax
t8x
f3y
t1y
t8y
f5x
t2x
t9x
f5y
t2y
t9y

FIG. 17

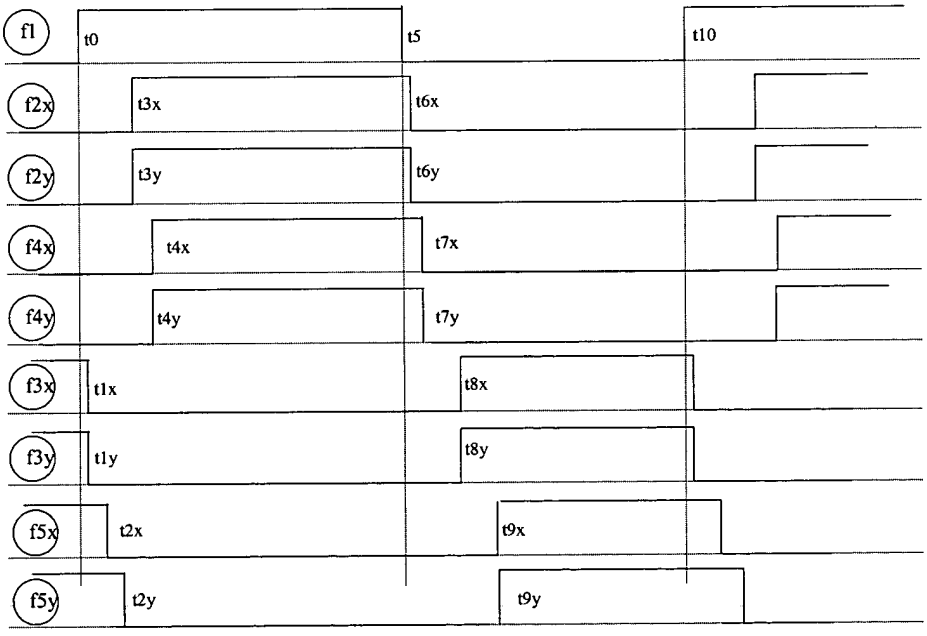

f1
t0
t5
t10
f2x
t3x
t6x
f2y
t3y
t6y
f4x
t4x
t7x
f4y
t4y
t7y
f3x
t1x
t8x
f3y
t1y
t8y
f5x
t2x
t9x
f5y
t2y
t9y

FIG. 18

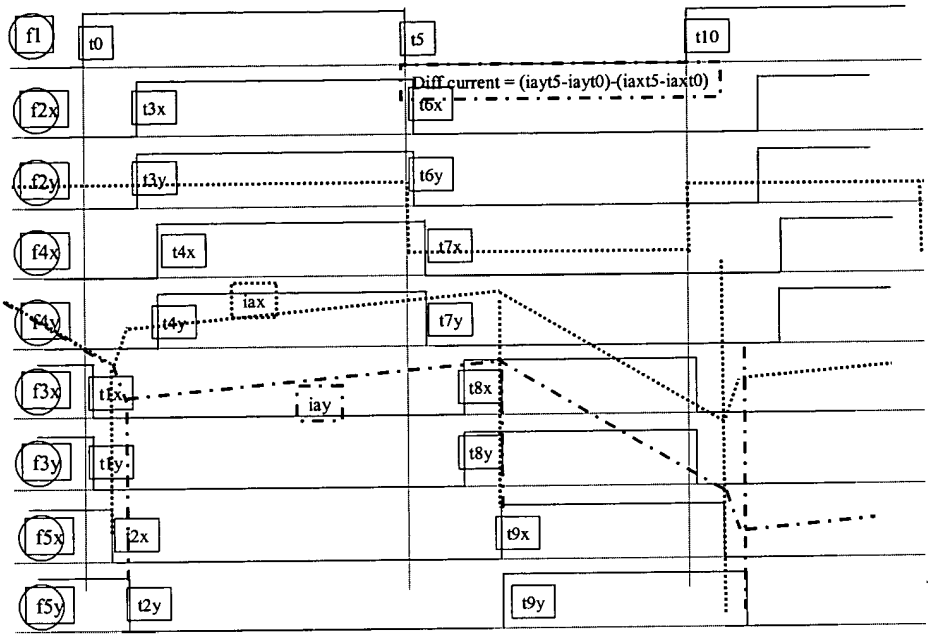

f1
t0
t5
t10
Diff current = (iayt5-iayt0)-(iaxt5-iaxt0)
f2x
t3x
t6x
f2y
t3y
t6y
f4x
t4x
t7x
iax
f4y
t4y
t7y
f3x
t8x
iay
f3y
t8y
f5x
t2x
t9x
f5y
t2y
t9y

FIG. 19

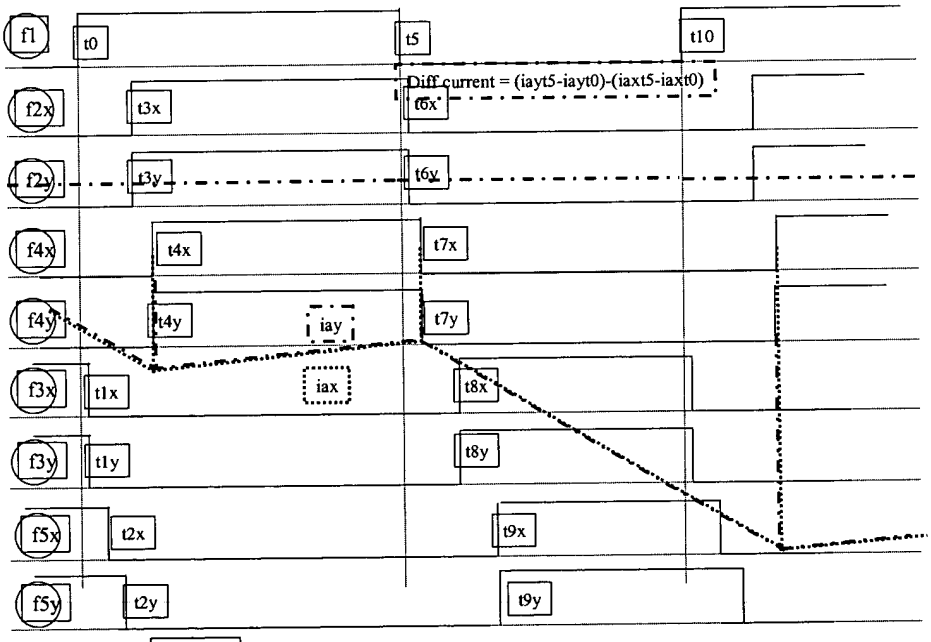

f1
t0
t5
t10
Diff current = (iayt5-iayt0)-(iaxt5-iaxt0)
f2x
t3x
t6x
f2y
t3y
t6y
f4x
t4x
t7x
f4y
t4y
iay
t7y
f3x
t1x
iax
t8x
f3y
t1y
t8y
f5x
t2x
t9x
f5y
t2y
t9y

FIG. 20

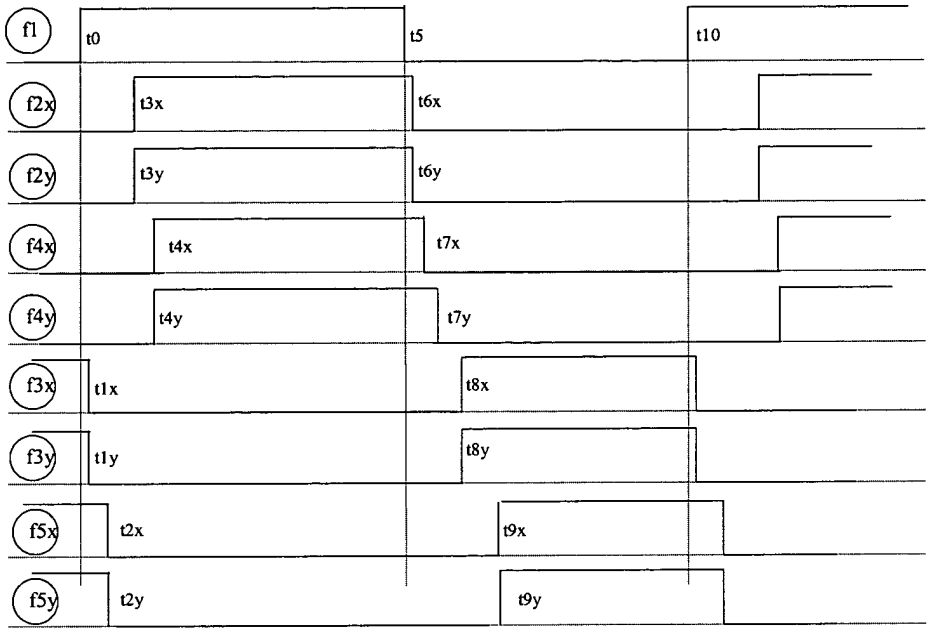

f1
t0
t5
t10
f2x
t3x
t6x
f2y
t3y
t6y
f4x
t4x
t7x
f4y
t4y
t7y
f3x
t1x
t8x
f3y
t1y
t8y
f5x
t2x
t9x
f5y
t2y
t9y

FIG. 21

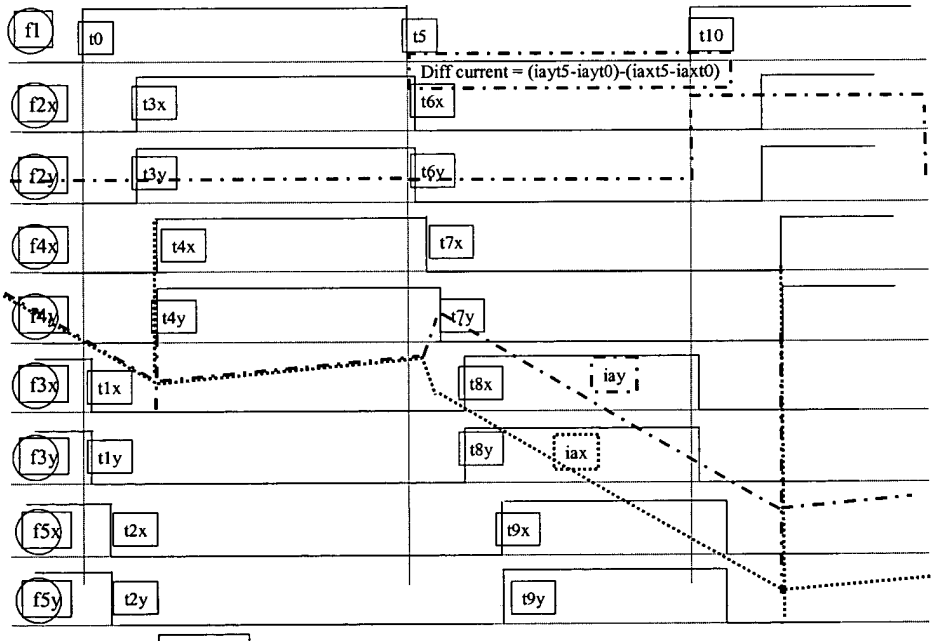

f1
t0
t5
t10
Diff current = (iayt5-iayt0)-(iaxt5-iaxt0)
f2x
t3x
t6x
f2y
t3y
t6y
f4x
t4x
t7x
f4y
t4y
t7y
f3x
t1x
t8x
iay
f3y
t1y
t8y
iax
f5x
t2x
t9x
f5y
t2y
t9y

FIG. 22

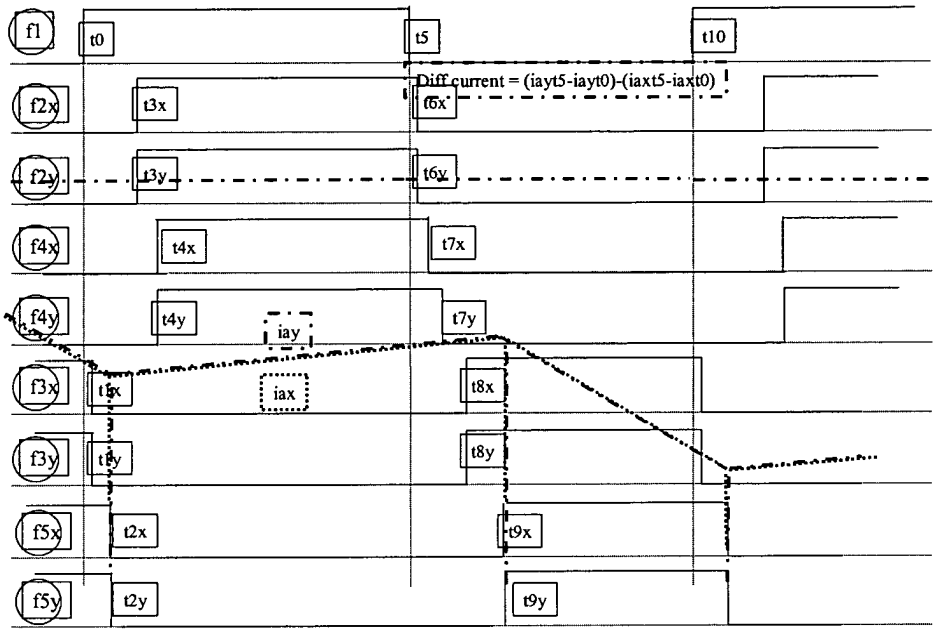

f1
t0
t5
t10
Diff current = (iayt5-iayt0)-(iaxt5-iaxt0)
f2x
t3x
t6x
f2y
t3y
t6y
f4x
t4x
t7x
f4y
t4y
iay
t7y
f3x
t1x
iax
t8x
f3y
t1y
t8y
f5x
t2x
t9x
f5y
t2y
t9y

FIG. 23

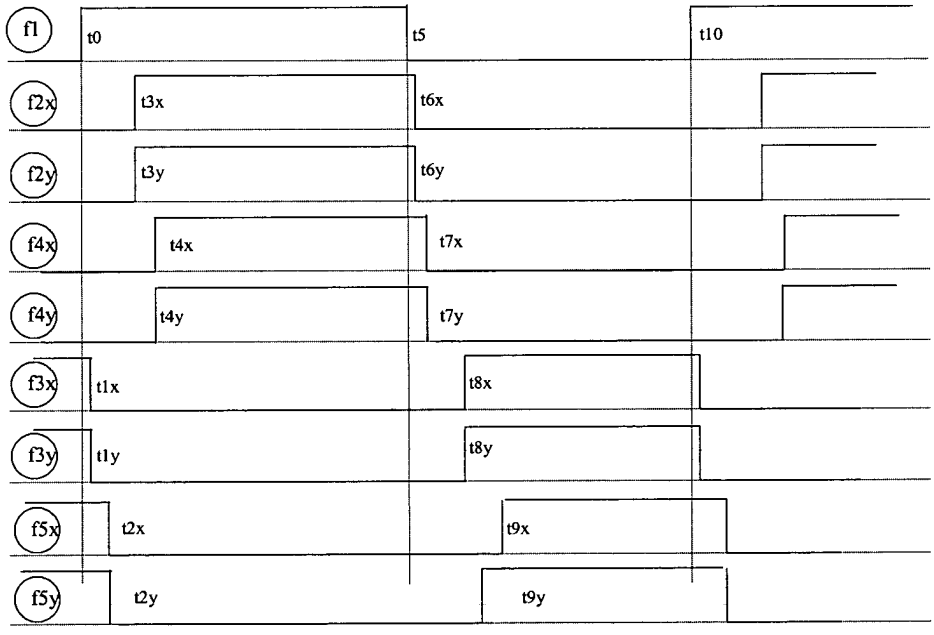

f1
t0
t5
t10
f2x
t3x
t6x
f2y
t3y
t6y
f4x
t4x
t7x
f4y
t4y
t7y
f3x
t1x
t8x
f3y
t1y
t8y
f5x
t2x
t9x
f5y
t2y
t9y

FIG. 24

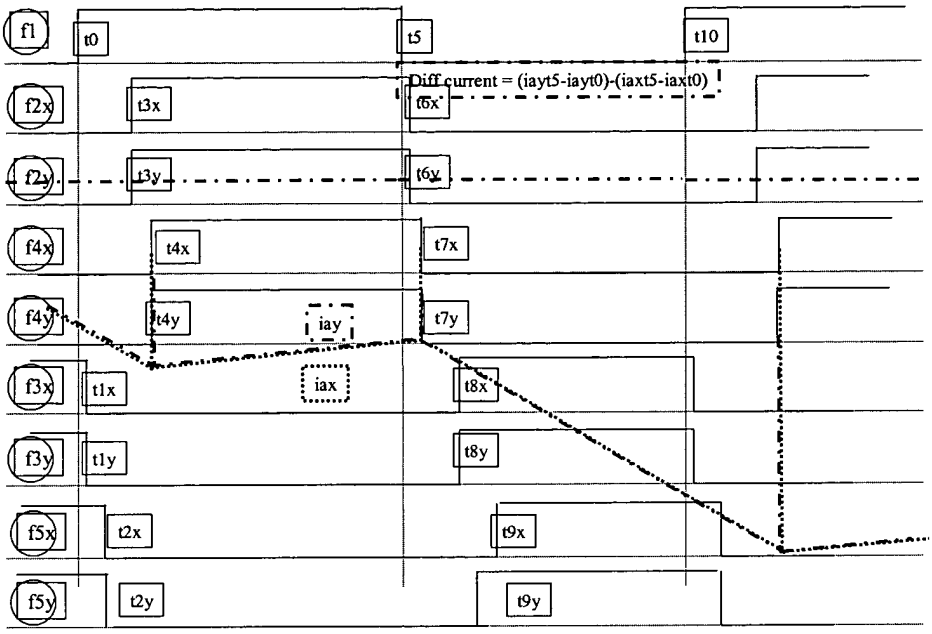

f1
t0
t5
t10
Diff current = (iayt5-iayt0)-(iaxt5-iaxt0)
f2x
t3x
t6x
f2y
t3y
t6y
f4x
t4x
t7x
f4y
t4y
iay
t7y
f3x
t1x
iax
t8x
f3y
t1y
t8y
f5x
t2x
t9x
f5y
t2y
t9y

FIG. 25

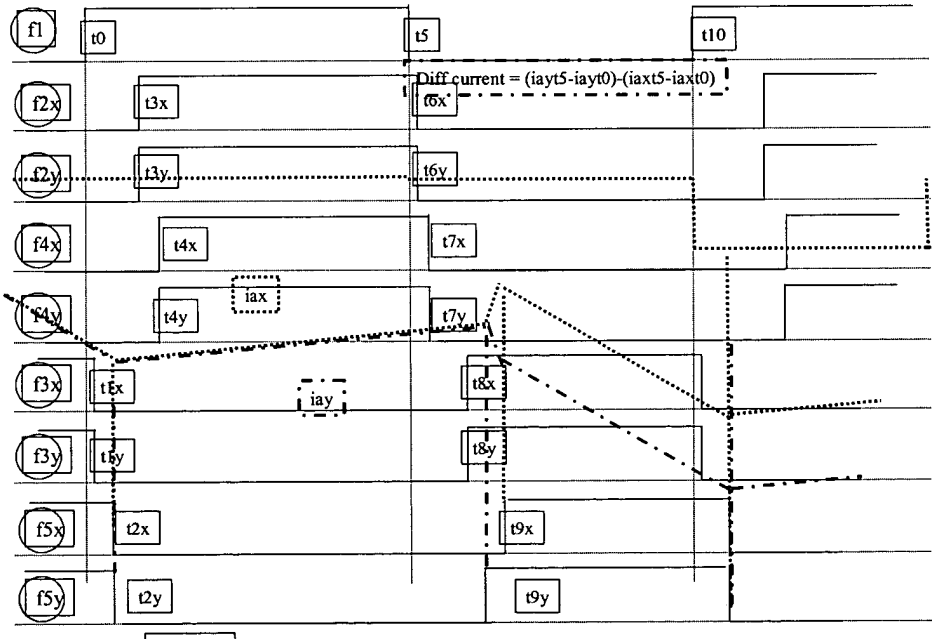

f1
t0
t5
t10
Diff current = (iayt5-iayt0)-(iaxt5-iaxt0)
f2x
t3x
t6x
f2y
t3y
t6y
f4x
t4x
t7x
iax
f4y
t4y
t7y
f3x
t1x
iay
t8x
f3y
t1y
t8y
f5x
t2x
t9x
f5y
t2y
t9y

FIG. 26

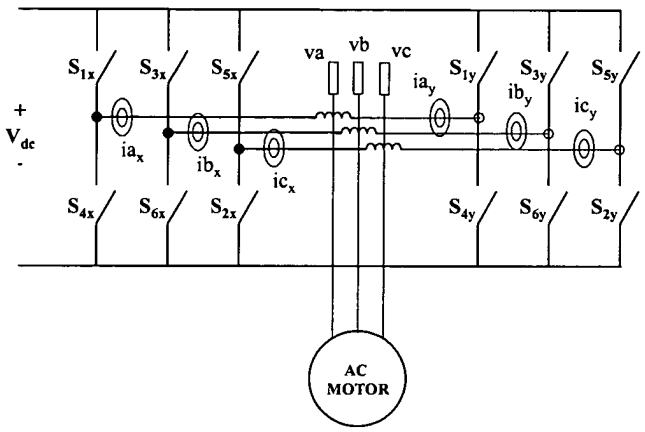

+
V_{dc}
-
S_{1x}
S_{3x}
S_{5x}
S_{4x}
S_{6x}
S_{2x}
va
vb
vc
ia_x
ib_x
ic_x
ia_y
ib_y
ic_y
S_{1y}
S_{3y}
S_{5y}
S_{4y}
S_{6y}
S_{2y}
AC
MOTOR

FIG. 27

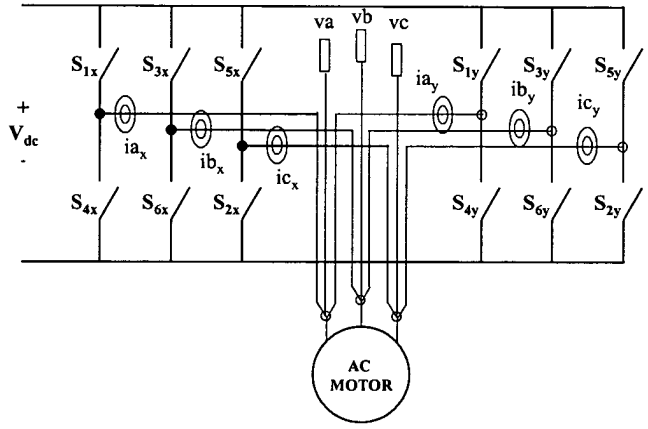

+
V_{dc}
-
S_{1x}
S_{3x}
S_{5x}
S_{4x}
S_{6x}
S_{2x}
va
vb
vc
ia_x
ib_x
ic_x
ia_y
ib_y
ic_y
S_{1y}
S_{3y}
S_{5y}
S_{4y}
S_{6y}
S_{2y}
AC
MOTOR

FIG. 28

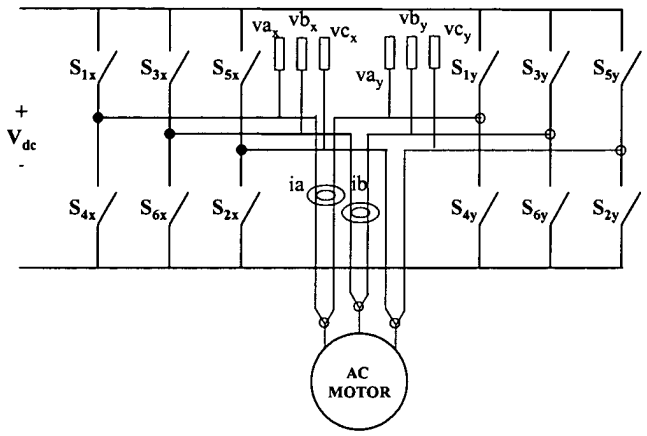

va_x vb_x vc_x
vb_y vc_y
va_y
S1x S3x S5x
S1y S3y S5y
+
Vdc
-
ia ib
S4x S6x S2x
S4y S6y S2y
AC
MOTOR

FIG. 29

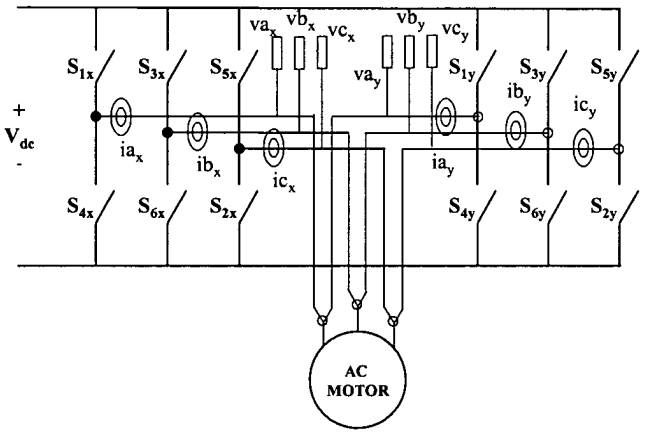

va_x vb_x vc_x
vb_y vc_y
va_y
S1x S3x S5x
S1y S3y S5y
ib_y
ic_y
+
Vdc
-
ia_x
ib_x
ic_x
ia_y
S4x S6x S2x
S4y S6y S2y
AC
MOTOR

FIG. 30

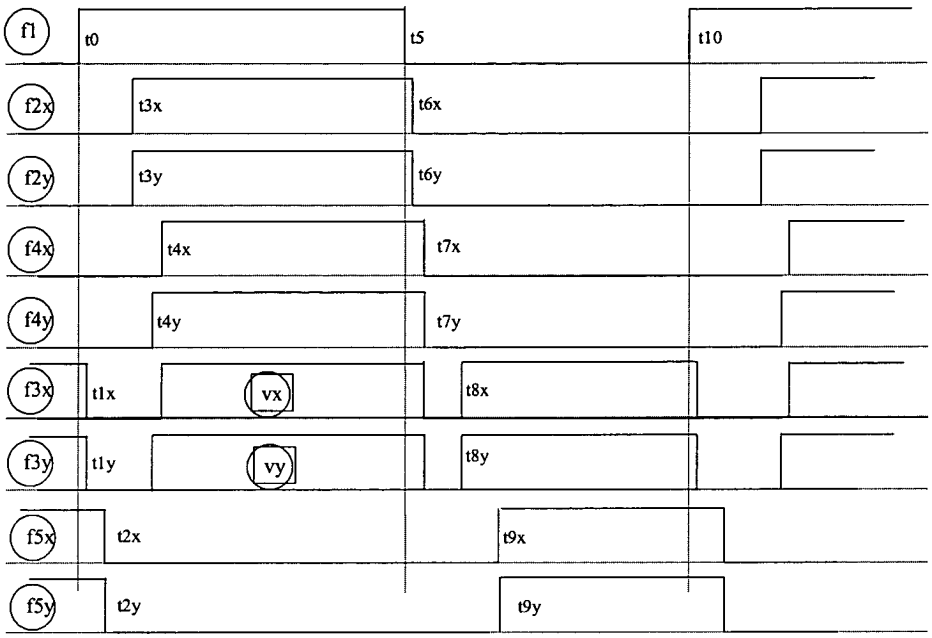

f1
t0
t5
t10
f2x
t3x
t6x
f2y
t3y
t6y
f4x
t4x
t7x
f4y
t4y
t7y
f3x
t1x
vx
t8x
f3y
t1y
vy
t8y
f5x
t2x
t9x
f5y
t2y
t9y

FIG. 31